

## Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

Claim 1. (Canceled)

Claim 2. (Currently Amended) The assay of claim + 37, wherein the assay composition comprises purified CoaX protein.

Claim 3. (Currently Amended) The assay of claim + 37, wherein the assay composition comprises partially purified CoaX protein.

Claim 4. (Currently Amended) The assay of claim + 37, wherein the assay composition comprises crude cell extracts from a cell producing CoaX protein.

Claim 5. (Currently Amended) The assay of claim + 37, wherein the CoaX protein is encoded by a *coaX* gene derived from a pathogenic bacterium selected from the group consisting of *Bordetella pertussis*, *Borrelia burgdorferi*, *Campylobacter jejuni*, *Clostridium difficile*, *Helicobacter pylori*, *Neisseria meningitidis*, *Pseudomonas aeruginosa*, *Treponema pallidum* and *Xylella fastidiosa*.

Claim 6. (Original) The assay of claim 5, wherein the CoaX protein has an amino acid sequence selected from the group consisting of SEQ ID NO:15, SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:55, SEQ ID NO:14 or SEQ ID NO:67, SEQ ID NO:43 or SEQ ID NO:22, SEQ ID NO:20, SEQ ID NO:10 and SEQ ID NO:65.

Claim 7. (Currently Amended) The assay of claim + 37, wherein the CoaX protein is encoded by a *coaX* gene derived from a pathogenic bacterium selected from the group consisting of *Bacillus anthracis*, *Bordetella pertussis*, *Borrelia burgdorferi*, *Campylobacter jejuni*, *Clostridium difficile*, *Helicobacter pylori*, *Neisseria meningitidis*, *Neisseria gonorrhoeae*, *Porphyromonas gingivalis*, *Pseudomonas aeruginosa*, *Treponema pallidum* and *Xylella fastidiosa*.

Claim 8. (Original) The assay of claim 7, wherein the CoaX protein has an amino acid sequence selected from the group consisting of SEQ ID NO:45, SEQ ID NO:15, SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:55, SEQ ID NO:14 or SEQ ID NO:67, SEQ ID NO:43 or SEQ ID NO:22, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:20, SEQ ID NO:10 and SEQ ID NO:65.

Claim 9. (Currently Amended) The assay of claim + 37, wherein the CoaX is encoded by a *coaX* gene derived from a bacterium selected from the group consisting of *Aquifex aeolicus*, *Bacillus anthracis*, *Bacillus halodurans*, *Bacillus stearothermophilus*, *Bacillus subtilis*, *Caulobacter crescentus*, *Chlorobium tepidum*, *Clostridium acetobutylicum*, *Dehalococcoides ethenogenes*, *Deinococcus radiodurans*, *Desulfovibrio vulgaris*, *Geobacter sulfurreducens*, *Pseudomonas putida*, *Rhodobacter capsulatus*, *Thiobacillus ferrooxidans*, *Streptomyces coelicolor*, *Synechocystis* sp., *Thermotoga maritima*, *Bordetella pertussis*, *Borrelia burgdorferi*, *Campylobacter jejuni*, *Clostridium difficile*, *Helicobacter pylori*, *Neisseria meningitidis*, *Neisseria gonorrhoeae*, *Porphyromonas gingivalis*, *Pseudomonas aeruginosa*, *Treponema pallidum*, *Xylella fastidiosa* and *Mycobacterium tuberculosis*.

Claim 10. (Original) The assay of claim 9, wherein the CoaX protein has an amino acid sequence selected from the group consisting of SEQ ID NO:12, SEQ ID NO:70, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:2, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:3, SEQ ID NO:57, SEQ ID NO:8, SEQ ID NO:59, SEQ ID NO:7, SEQ ID NO:61, SEQ ID NO:6, SEQ ID NO:63, SEQ ID NO:4, SEQ ID NO:13, SEQ ID NO:9, SEQ ID NO:15, SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:55, SEQ ID NO:14 or SEQ ID NO:67, SEQ ID

NO:43 or SEQ ID NO:22, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:20, SEQ ID NO:10, SEQ ID NO:65 and SEQ ID NO:5.

Claim 11. (Currently Amended) The assay of claim ~~4~~ 37, wherein said composition is further contacted with pantothenate or a pantothenate analog.

Claim 12. (Currently Amended) The assay of claim 11, wherein the ability to ~~modulate~~ inhibit activity of CoaX is determined based on the ability of the test compound to effect levels of pantothenate or pantothenate analog in the assay mixture.

Claim 13. (Canceled)

Claim 14. (Currently Amended) The assay of claim ~~13~~ 37 wherein step (b) further ~~comprising~~ comprises determining the ability of the test compound to ~~inhibit the activity of~~ bind to the CoaX protein; wherein the compound is identified as a potential antibiotic based on the ability of the compound to bind to and inhibit the activity of the CoaX protein.

Claim 15-36. (Canceled)

Claim 37. (Currently Amended) An assay for the identification of an antibiotic, comprising;

- (a) contacting an assay composition comprising a ~~pantothenate kinase~~ CoaX protein with a test compound, the CoaX protein having a pantothenate kinase activity;  
and
- (b) determining the ability of the test compound to ~~bind to or modulate~~ inhibit the ~~activity of the pantothenate kinase~~ activity;

wherein the test compound is identified as an antibiotic based on the ability of the compound to ~~bind to or modulate~~ inhibit the ~~activity of the~~ pantothenate kinase activity.